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EXAMINER

VERBITSKY, GAIL KAPLAN

ART UNIT PAPER NUMBER

2859

DATE MAILED: 04/09/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

## Office Action Summary

Application No.

10/069,037

Applicant(s)

GRAY, ADRIAN L

Examiner

Gail Verbitsky

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 26 November 2003.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 22-42 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 33 and 41 is/are allowed.
- 6) ☒ Claim(s) 22-32,42 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some \* c) ☐ None of:
- 1) ☒ Certified copies of the priority documents have been received.
  - 2) ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  - 3) ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)  
Paper No(s)/Mail Date \_\_\_\_\_.
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_\_.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: \_\_\_\_\_.

## **DETAILED ACTION**

### ***Claim Objections***

1. A) Claim 38 is finally objected to under 37 CFR 1.75(c), as being of improper dependent form for failing to further limit the subject matter of a previous claim. Applicant is required to cancel the claim(s), or amend the claim(s) to place the claim(s) in proper dependent form, or rewrite the claim(s) in independent form. In this case, it is not clear how "sheath having tubes" further limits claim 22, and how the sheath is related to the shielding of claim 22.

B) Claim 36 is finally objected to because of the following informalities: It is not clear how the "sheath" is related to the outer and inner tubes. Appropriate clarification is required.

### ***Claim Rejections - 35 USC § 103***

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

3. Claims 22, 26-28, 37, 39 are finally rejected under 35 U.S.C. 103(a) as being unpatentable over McMurphy in view of Hall and Francis.

McMurphy discloses in Fig. 1 a thermocouple comprising a tip, an additional external shielding/ protective tube/ sheath having an inner tube 12 and an outer tube (metal) 14 over a filler of a low sintering refractory material

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(magnesia) 18. It is inherent, that the thermocouple junction is produced by thermocouple wires from the thermocouple cable/ shielding.

McMurphy does not explicitly teach that the refractory material is a particulate borosilicate, as stated in claim 22, that the outer tube is constricted, as stated in claim 24. McMurphy does not explicitly teach that a tip of the thermocouple is electrically connected to an insulated (mineral) thermocouple cable, as stated in claim 22, the particular temperature of drying, the particular content/ percentage of a borosilicate and a boric acid powder in the refractory material, as stated in claim 27, and the remaining limitations of claims 26-28, 37, 39.

Hall discloses a device comprising a sensing thermocouple tip 17 in an electrical connection with a mineral insulated thermocouple cable, the device having an additional protective shielding 18.

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the thermocouple device, disclosed by McMurphy, so as to have the thermocouple tip in an electrical connection with the thermocouple cable, as taught by Hall, so as to provide a thermocouple junction which is necessary for temperature measurements and proper operation of the thermocouple.

Francis discloses a refractory ceramic material containing a borosilicate frit (particles/ particulate) and a boric acid powder. The material is heated at low temperature without melting (low sintering) and dried at a temperature of approximately 110 degrees C.

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Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to replace the refractory filler, disclosed by McMurphy, with a refractory filler comprising borosilicate particles and a boric acid powder, as taught by Francis, because both of them are alternate types of refractory ceramic material which will perform the same function of protecting thermocouple wires, if one is replaced with the other.

With respect to claim 26: the particular content of the particulate borosilicate, i.e., 6 and 10 percent by weight of the refractory material, absent any criticality, is only considered to be the "optimum" content, that a person having ordinary skill in the art at the time the invention was made would have been able to determine using routine experimentation based, among other things, on the temperature to be measured and the environment the device is to be used. In re Boesch, 205 USPQ 215 (CCPA 1980).

With respect to claim 39: the particular temperature range, i.e., 135-150 degrees C, absent any criticality, is only considered to be the "optimum" temperature range, that a person having ordinary skill in the art at the time the invention was made would have been able to determine using routine experimentation based, among other things, on the type of the manufacturing process of the device, etc. In re Boesch, 205 USPQ 215 (CCPA 1980).

4. Claims 23-25, 29-32, 34, 36, 38, 40 are finally rejected under 35 U.S.C. 103(a) as being unpatentable over McMurphy, Hall and Francis as applied to claims 22, 26-28, 37, 39 above, and further in view of Kilp.

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McMurphy, Hall and Francis disclose the device as stated above in paragraph 3.

They do not teach that the inner tube is made of a metal, as stated in claim 23, that the outer tube is constricted by rolling, as stated in claims 24-25, that the tubes are stainless steel, as stated in claim 29, and the remaining limitations of claims 29-32, 34, 36, 38, 40.

Kilp discloses in figs. 1-3 a device in the filed of applicant's endeavor comprising a protective sheath for a thermoelectric device, the sheath having two tubes made of a stainless steel material wherein, a refractory ceramics in a form of a bond (bead), is inserted between the two tubes, and thus, externally to an internal tube, thus, making the refractory ceramics act as a filler and as an additional external shielding. The refractory ceramics is then compacted (constricted) between by a rolling process. This would imply that a constriction process takes place. Kilp teaches a partial (low temperature) sintering and anneal of the outer tube. It is inherent, that the refractory material is sintered before the thermocouple is used. Kilp teaches that the space between the tubes was filled with a mineral insulation and then reduced by rolling or swaging to achieve a required density and minimize porosity.

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to replace the shielding, disclosed by McMurphy, Hall and Francis, with the protective tube/ shielding made by a method, as taught Kilp, because both of them are alternate types of protective tubes for thermoelectric devices which will perform the same function of

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protecting thermoelectric device from harsh environment and improve accuracy of the device.

With respect to claim 30: the particular temperature range, i.e., 135-150 degrees C, absent any criticality, is only considered to be the "optimum" temperature range, that a person having ordinary skill in the art at the time the invention was made would have been able to determine using routine experimentation based, among other things, on the type of the manufacturing process of the device, etc. In re Boesch, 205 USPQ 215 (CCPA 1980).

The method steps will be met during the normal manufacturing process of the device stated above.

5. Claims 35, 42 are finally rejected under 35 U.S.C. 103(a) as being unpatentable over McMurphy, Hall, Francis and Kilp as applied to claims 23-25, 29-32, 34, 36, 38, 40 above, and further in view of AU 9712601A [hereinafter AU].

McMurphy, Hall, Francis and Kilp disclose the device as stated above in paragraph 4.

They do not explicitly teach that the annealing process follows the constriction process, as stated in claims 35, 42.

AU teaches to fill a sheath with a refractory material, reduce diameter (constrict) and then anneal the sheath.

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the device and process of making, disclosed by McMurphy, Hall, Francis and Kilp, so as to make the annealing follow

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the constriction, as taught AU, so as to reinforce the optimal physical properties of the device and make the device less brittle and less susceptible to a damage related to temperature, pressure, or a harsh environment.

***Allowable Subject Matter***

6. Claims 33 and 41 are allowed.

***Response to Arguments***

7. Applicant's arguments filed November 26, 2003 have been fully considered but they are not persuasive.

Applicant states that McMurphy discloses "fully-pre-sintered and quite expensive protection tubes with the usage limited to applications where the thermocouples must be manipulated frequently...", as opposed to the present invention where the metallic tube "will bend when hot to accommodate the stresses...". This argument is not persuasive because, the limitation upon which the applicant relies on, i.e., that the metallic tube will bend when hot to accommodate the stresses, is not stated in the claims. It is the claims that define the claimed invention, and it is claims, not specification that are anticipated or unpatentable. Constant v. Advanced Micro-Devices, Inc., 7 USPQ2d 1064.

Applicant states that the filler of McMurphy will disappear if the outer sheath has been consumed. This argument is not persuasive, because, applicant does not rule out a possibility of the outer sheath can be consumed. Applicant does not claim otherwise. It is the claims that define the claimed invention, and it is claims, not specification that are anticipated or unpatentable. Constant v. Advanced Micro-Devices, Inc., 7 USPQ2d 1064.



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Applicant states that in the present invention sintering occurs at temperature at only 780 degrees C, and that the thermocouple of the present invention remains protected throughout the required temperature range. These arguments are not persuasive because, the limitation upon which the applicant relies on, i.e., that the metallic tube will bend when hot to accommodate the stresses, is not stated in the claims. This argument is not persuasive because the limitations upon which applicant relies on, i.e., the particular temperature range and the particular temperature of sintering, are not stated in the claims. It is the claims that define the claimed invention, and it is claims, not specification that are anticipated or unpatentable. Constant v. Advanced Micro-Devices, Inc., 7 USPQ2d 1064.

Applicant states that Francis does not provide a durable insulation for a thermocouple structure. This argument is not persuasive because the limitation upon which applicant relies on, i.e., durable insulation, is not stated in the claims. It is the claims that define the claimed invention, and it is claims, not specification that are anticipated or unpatentable. Constant v. Advanced Micro-Devices, Inc., 7 USPQ2d 1064.

Applicant states that McMurphy does not disclose a claimed composition, and that Francis uses the composition for "entirely different purpose than the present invention". Applicant also states that Francis is a non-analogous art. In response to applicant's statement that Francis is a non-analogous art, it has been held that the determination that a reference is from non-analogous art is twofold. First, we decide if the reference is within the filed of inventor's

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endeavor. If it is not, we proceed to determine whether the reference is reasonably pertinent to the particular problem with which the inventor was involved. In re Wood, 202 USPQ 171, 174. In this case, the Examiner uses Francis only as a secondary reference for its teaching of the particular composition of a refractory material.

***Conclusion***

**8. THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

9. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. The prior art cited in the PTO-892 and not mentioned above disclose related devices and methods.

Any inquiry concerning this communication should be directed to the Examiner Verbitsky who can be reached at (571) 272-2253 Monday through Friday 8:00 to 4:00 ET.

GKV

Gail Verbitsky  
Primary Patent Examiner, TC 2800

